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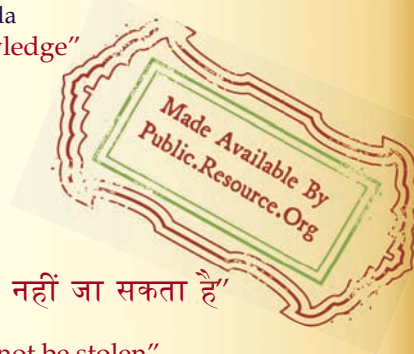
IS 10055 (1982): Jute Needleloom Felts [TXD 33: Industrial Fabrics]



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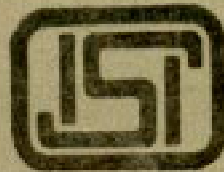


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*Indian Standard*  
SPECIFICATION FOR  
JUTE NEEDLELOOM FELTS

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# Indian Standard

## SPECIFICATION FOR JUTE NEEDLELOOM FELTS

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# *Indian Standard*

## SPECIFICATION FOR JUTE NEEDLELOOM FELTS

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 11 January 1982, after the draft finalized by the Non-woven Textiles Sectional Committee had been approved by the Textile Division Council.

**0.2** The jute needleloom felts are used for padding, cushioning and packing purposes mainly.

**0.3** In the preparation of this standard, assistance has been derived from BS 2628 : 1972, JIS L 3203 and Defence (Government of India) Specification IND/ME/410 on the subject of needleloom jute felts.

**0.4** Standards of Weights and Measures Act, 1976 stipulates the use of International System of Units in the country; in order to familiarize the industry with this system, the recommended SI units for use in the textile industry are given in Appendix B.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960\*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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### 1. SCOPE

**1.1** This standard covers three grades and seven varieties of jute needleloom felts (depending upon thickness, mass and chemical requirements).

### 2. MANUFACTURE

**2.1** The felts of Variety No. 1 shall be reinforced with support fabric. The jute fabric used for reinforcement in the manufacture of felt should

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\*Rules for rounding off numerical values (*revised*).

have a minimum mass of 120 g/m<sup>2</sup>, 24 ends/dm and 16 picks/dm. For other varieties the reinforcement may be provided, if agreed to between the buyer and the seller.

**2.2** The felts in Varieties 1 and 2 (*see 3.1*) may be needled on one side, while in case of remaining varieties the felts shall be needled on both sides. The needle punching operations should be repeated to achieve the desired thickness and/or mass of the felt.

**2.3** Grade I felts (*see 3.2*) shall be manufactured from well carded jute fibre free from roots and other foreign matters. Grades II and III felts shall be manufactured from jute caddies, processed through dust shaker and reasonably free from dust and foreign matter.

**2.4** The felts should, as far as possible, be free from ridges and creases, and preferably have straight edges.

### **3. REQUIREMENTS**

**3.1 Physical Requirements** — The felts shall conform to the physical requirements as given in Table 1 for all grades.

**3.1.1 Moisture Regain** — 16 percent, *M<sub>ax</sub>* of average of 5 test specimens when determined as given in **3.1.1.1**.

$$\text{3.1.1.1 Moisture Regain, percent} = \frac{M_o - M_d}{M_d} \times 100$$

where

*M<sub>o</sub>* = Original mass of test specimens, and

*M<sub>d</sub>* = Mass of test specimen dried in an oven maintained at a temperature of 105 ± 3°C for 4 hours.

**3.1.2 Width** — The width shall be 90 cm or as specified in the contract subject to a tolerance of  $\begin{matrix} +5 \\ -3 \end{matrix}$  percent, when tested in accordance with IS : 1954-1969\*.

**3.2 Chemical Requirements** — The felts of Grades I and II shall conform to the chemical requirements given in Table 2.

NOTE — The felt of Grade III shall conform to the requirements specified in Table 1.

\*Methods for determination of length and width of fabrics (*first revision*).

TABLE 1 PHYSICAL REQUIREMENTS OF JUTE NEEDLELOOM FELTS

( Clause 3.1 )

VARIETY No.	MASS (CONDITIONED)	THICKNESS	PREFERRED LENGTH OF FELT IN BCLT/ROLL
(1)	(2)	(3)	(4)
	g/m <sup>2</sup>	mm	m
1	500 } $\pm 12$ percent 700 }	3.0 $\pm_{-0.5}^{+1.0}$	50
2	1 000 } $\pm 12$ percent 1 400 }	6.0 $\pm 1.5$	50
3	1 500 } $\pm 12$ percent 2 250 }	10.0 $\pm_{-1.5}^{+3.0}$	50
4	2 100 } $\pm 10$ percent 2 900 }	13.0 $\pm 2.0$	50
5	2 600 } $\pm 10$ percent 3 600 }	16.0 $\pm_{-2.0}^{+3.5}$	50
6	3 000 } $\pm 10$ percent 4 200 }	19.0 $\pm 2.5$	25
7	4 000 } $\pm 10$ percent 5 600 }	25.0 $\pm_{-2.5}^{+3.0}$	25

Method  
of TestMethod A of  
IS : 1964-1970\*

Appendix A

IS : 1954-1969†

NOTE 1 — For conforming the variety, check conditioned mass first, then thickness.

NOTE 2 — Preferred length mentioned in col 4 is for guidance only.

\*Methods for determination of weight per square metre and weight per linear metre of fabrics (first revision).

†Methods for determination of length and width of fabrics (first revision).

TABLE 2 CHEMICAL REQUIREMENTS OF JUTE NEEDLELOOM FELTS

( Clause 3.2 )

SL No.	CHARACTERISTIC	REQUIREMENT		METHOD OF TEST
		Grade I	Grade II	
(1)	(2)	(3)	(4)	(5)
i)	Chloride content, percent, <i>Max</i>	0.05	0.2	IS : 4202-1967*
ii)	Sulphate content, percent, <i>Max</i>	0.2	0.5	IS : 4203-1967†
iii)	pH value	5 to 8	5 to 9	IS : 1390-1961‡
iv)	Ether-soluble matter, per- cent, <i>Max</i>	2.5	—	IS : 4390-1967§
v)	Water-soluble matter, per- cent, <i>Max</i>	2.0	6.0	IS : 3456-1966
vi)	Ash content (other than ash of proofing agents), percent, <i>Max</i> , unless otherwise specified	2.5	6.5	7 of IS : 199- 1973¶

\*Method for determination of chloride content of textile materials.

†Method for determination of sulphate content in textile materials.

‡Methods for determination of pH value of aqueous extracts of textile materials.

§Method for determination of ether-soluble matter in textile materials.

||Method for determination of water soluble matter of textile materials.

¶Methods for estimation of moisture, total size or finish, ash and fatty matter in grey and finished cotton textile materials ( *second revision* ).

## 4. PACKING

**4.1** Unless otherwise agreed to between the buyer and the seller, the felts shall be packed as given in **4.2**.

**4.2** The felts shall be rolled individually and tied with a 3-ply jute twine at two places minimum. A suitable number of rolls shall be wrapped with polyethylene film of minimum 0.04 mm thickness and heavy cee cloth or equivalent hessian to form a bale. The outer layer shall be tightly stitched with jute twine keeping the distance between the two stitches about 5 cm. Stitching shall not pierce the waterproof layer.

## 5. MARKING

**5.1** Each bale shall bear the following information:

- a) Name and trade-mark of the manufacturer;
- b) Nominal length, width, thickness;
- c) Grade (*see* 2.3 and 3.2), and variety No.;
- d) Date of manufacture; and
- e) Any other information specified by the purchaser.

**5.1.1** The felts may also be marked with the ISI Certification Mark.

**NOTE**—The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## 6. SAMPLING

**6.1 Lot**—The quantity of jute needleloom felts of same grade and mass delivered to a buyer against a despatch note shall constitute a lot.

**6.2** The conformity of the lot to the requirements of this specification shall be determined on the basis of the tests carried out on the sample selected from it.

**6.3** Unless otherwise agreed to between the buyer and the seller, the number of rolls to be selected at random from a lot shall be in accordance with col 1 and 2 of Table 3.

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**TABLE 3 SAMPLE SIZE AND CRITERIA FOR CONFORMITY**

( *Clauses 6.3 and 6.4* )

NO. OF ROLLS IN THE LOT	NO. OF ROLLS TO BE SELECTED	ACCEPTANCE NUMBER	SUB-SAMPLE SIZE
(1)	(2)	(3)	(4)
Up to 100	5	0	2
101 „ 150	8	1	2
151 „ 300	13	1	3
301 „ 500	20	2	3
501 and above	32	3	5

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**6.4** The number of tests and criteria for conformity for various characteristics shall be as follows :

<i>Characteristics</i>	<i>Number of Tests</i>	<i>Criteria for Conformity</i>
*Mass and chemical characteristics	According to col 4 of Table 3	All test specimens shall satisfy the relevant requirements
*Thickness Length Width	According to col 2 of Table 3	Non-conforming rolls not exceeding the corresponding number given in col 3 of Table 3

## APPENDIX A

( Table 1 )

### METHOD OF TEST FOR DETERMINING THICKNESS

#### A-1. ATMOSPHERIC CONDITIONS FOR CONDITIONING AND TESTING

**A-1.1** The tests shall be carried out in the standard atmosphere at  $27 \pm 2^\circ\text{C}$  temperature and  $65 \pm 2$  percent relative humidity (*see also* IS : 6359-1971†).

**A-1.2** Prior to test, the specimens shall be conditioned to moisture equilibrium in the standard atmosphere. When the specimens have been left in such an atmosphere for 48 hours in such a way as to expose as far as possible all portions of the specimens to the atmosphere, they shall be deemed to have reached moisture equilibrium.

NOTE — Thickness measurements may also be carried out in the prevailing atmosphere after attaining moisture equilibrium. But, in case of dispute, conditioning of the test specimen is recommended.

#### A-2. THICKNESS

**A-2.1 Test Specimen** — Each roll in the test sample selected in accordance with col 1 and 2 of Table 3 shall constitute a test specimen.

\*See Note 1 under Table 1.

†Method for conditioning of textiles.

## A-2.2 Apparatus

**A-2.2.1** Micrometer gauge provided with a dial gauge reading to 0.25 mm or less having a separate or detachable foot of 10 cm diameter.

**A-2.2.1.1** The gauge shall be capable to provide a pressure of 21 kPa on the test specimen.

**NOTE** — 1 Kilopascal (kPa) is approximately equal to 10 gf/cm<sup>2</sup>.

## A-2.3 Procedure

**A-2.3.1** Clean the surfaces of the presser foot and anvil. Adjust the gauge so that it provides the requisite pressure (*see A-2.2.1.1*) on the specimen during the test. Set the gauge to read zero when the presser foot rests on the anvil.

**A-2.3.2** Raise the presser foot and lay a portion of the specimen on the anvil and render it free from wrinkles and creases with no greater tension than is necessary to make it lie flat and straight. Lower the presser foot slowly avoiding jerks or impacts till the requisite pressure (*see A-2.2.1.1*) is applied on the felt. Read the dial immediately after the visible movement of the pointer ceases.

**A-2.3.3** Measure the thickness of the specimen under test at 5 different places across the diagonal and record the values. Find the average of all the readings of each test specimen.

# APPENDIX B

( Clause 0.4 )

## RECOMMENDED SI UNITS FOR TEXTILES

SI No.	Characteristic	SI Unit		Application
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
1.	Length	Millimetre	mm	Fibres Samples, test specimens (as appropriate) Yarns, ropes, cordage, fabrics
		Millimetre, centimetre	mm, cm	
		Metre	m	

Sl No.	Characteristic	SI Unit		Application
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
2.	Width	Millimetre	mm	Narrow fabrics
		Centimetre	cm	Other fabrics
		Millimetre, centimetre	mm, cm	Samples, test specimens ( as appropriate )
		Centimetre, metre	cm, m	Carpets, druggets, <i>DURRIES</i> ( as appropriate )
3.	Thickness	Micrometre ( micron )	$\mu$ m	Delicate fabrics
		Millimetre	mm	Other fabrics, carpets, felts
4.	Linear density	Tex	tex	Yarns
		Millitex	mtex	Fibres
		Decitex	dtex	Filaments, fila- ment yarns
		Kilotex	ktex	Slivers, ropes, cordage
5.	Diameter	Micrometre ( micron )	$\mu$ m	Fibres
		Millimetre	mm	Yarns, ropes, cordage
6.	Circumference	Millimetre	mm	Ropes, cordage
7.	Threads in fabric			Woven fabrics ( as appro- priate )
	Lengthwise	Number per centimetre	ends/cm	
		Number per decimetre	ends/dm	
	Widthwise	Number per centimetre	picks/cm	
		Number per decimetre	picks/dm	

Sl No.	Characteristic	SI Unit		Application
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
8.	Warp threads in loom	Number per centimetre	ends/cm	Reeds
9.	Stitches in knitted fabric			Knitted fabrics (as appropriate)
	Lengthwise	Courses per centimetre	courses/cm	
		Courses per decimetre	courses/dm	
	Widthwise	Wales per centimetre	wales/cm	
		Wales per decimetre	wales/dm	
10.	Stitch length	Millimetre	mm	Knitted fabrics, made-up items
11.	Mass per unit area	Grams per square metre	g/m <sup>2</sup>	Fabrics
12.	Mass per unit length	Grams per metre	g/m	Fabrics
13.	Twist	Turns per centimetre	turns/cm	Yarns, ropes, cordage (as appropriate)
		Turns per metre	turns/m	
14.	Test or gauge length	Millimetre, centimetre	mm, cm	Fibres, yarns and fabric specimens (as appropriate)
15.	Breaking load	Millinewton	mN	Fibres, delicate yarns (individual or skeins)
		Newton	N	Strong yarns (individual or skeins), ropes, cordage, fabrics

SI No.	Characteristic	SI Unit		Application
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
16.	Breaking length	Kilometre	km	Yarns
17.	Tenacity	Millinewton per tex	mN/tex	Fibres, yarns (individual or skeins)
18.	Twist factor or twist multiplier	Turns per centimetre $\times$ square root of tex Turns per metre $\times$ square root of tex	$\left. \begin{array}{l} \text{turns/cm} \\ \times \sqrt{\text{tex}} \\ \text{turns/m} \\ \times \sqrt{\text{tex}} \end{array} \right\}$	Yarns (as appropriate)
19.	Bursting strength	Newton per square centimetre	N/cm <sup>2</sup>	Fabrics
20.	Tear strength	Millinewton, newton	mN, N	Fabrics (as appropriate)
21.	Pile height	Millimetre	mm	Carpets
22.	Pile density	Mass of pile yarn in grams per square metre per millimetre pile height	g/m <sup>2</sup> /mm pile height	Pile carpets
23.	Elastic modulus	Millinewton per tex per unit deformation	mN/tex/unit deformation	Fibres, yarns, strands